

REMARKS

Claims 1-9 are pending in this application.

By this Amendment, claim 1 is amended. See the specification at, for example, Fig. 1 and paragraphs [0012], [0014] and [0032]. Claim 9 is added

The provisional election of group I, claims 1-4 made during the September 9, 2005 telephone interview is hereby confirmed. Accordingly, claims 5-8 are withdrawn from examination.

However, the provisional election was made with traverse.

The Office Action asserts that the apparatus recited in claims 5-8 can be used to practice another materially different process such as etching. This assertion is improper. In particular, the apparatus, as recited in claims 5-8, is not arranged for an etching process.

It is also respectfully submitted that the subject matter of all claims is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims. Thus, it is respectfully submitted that the search and examination of the entire application could be made without serious burden. See MPEP §803 in which it is stated that "if the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions" (emphasis added). It is respectfully submitted that this policy should apply in the present application in order to avoid unnecessary delay and expense to Applicants and duplicative examination by the Patent Office.

Thus, withdrawal of the Restriction Requirement is respectfully requested.

The Office Action objects to the specification. The Abstract and the title are amended, as the Examiner required. Accordingly, withdrawal of the objection to the specification is respectfully requested.

The Office Action rejects claims 1-4 under 35 U.S.C. §112, second paragraph. Claim 1 is amended for better clarity, as the Examiner requested. Accordingly, withdrawal of the rejection of claims 1-4 under 35 U.S.C. §112, second paragraph, is respectfully requested.

The Office Action rejects claims 1-4 under 35 U.S.C. §103(a) over U.S. Patent No. 5,693,376 to Fetherston et al. ("Fetherston") or U.S. Patent No. 6,544,406 to Warren et al. ("Warren"). These rejections are respectfully traversed.

Fetherston and Warren each disclose a plasma source ion implantation (PSII) process in which ions are accelerated. See Fetherston at col. 1, lines 28-30, and col. 3, lines 24-28. See Warren at col. 5, lines 27-35.

The Office Action acknowledges that Fetherston and Warren do not disclose or suggest a plasma CVD process, but asserts that PSII is a specific type of plasma deposition process. The Office Action further asserts that it would have been obvious to one of ordinary skill in the art to utilize any plasma CVD process given the teaching of a plasma source within a cylindrical surface with the expectation of success.

However, Applicants respectfully assert that a PSII process is not a specific type of a plasma CVD process. Rather, a PSII process is completely different from a plasma CVD process. Fetherston, for example, recognizes that implantation is not the same as deposition. See col. 1, lines 24-26, which refer to "ion implantation or deposition," that acknowledges the distinction between the two. Thus, it would not have been obvious to one of ordinary skill to utilize a plasma CVD process based on the teachings of a PSII process.

In particular, a PSII process involves accelerated ions. See Fetherston at col. 1, lines 28-30 and col. 3, lines 26-28. See Warren at col. 5, lines 28-35. On the other hand, in the plasma CVD process, a gaseous raw material is introduced with a carrier gas into a furnace, for example, for plasma generating reaction, the raw material being excited by microwave or high frequency wave to generate plasma reaction gas, resulting in chemical reaction on the substrates.

See the specification at, for example, paragraph [0003]. Thus, in a plasma CVD process, no acceleration of ions is involved.

Fetherston specifically requires the acceleration of ions to achieve its intended effect. For at least the above reasons, one of ordinary skill in the art would not have been motivated to change Fetherston's PSII process, in which ion acceleration is required, to a plasma CVD process in which ion acceleration is not involved.

Furthermore, according to the PSII process described in Fetherston, a pulse voltage is applied to a target 20 and an electrode 30. The level of the pulse voltage differential between the target 20 and the electrode 30 determines whether ions will be implanted or deposited (column 7, lines 26-36), without the necessity of a direct bias voltage. The ions are deposited when the amplitude of the pulse voltage is relatively small. There are no chemical reactions such as gas decomposition in the process described in Fetherston.

According to the present plasma CVD process, raw material gas can be decomposed and then deposited on a substrate. Such plasma CVD process is substantially different from the PSII process described in Fetherston and Warren.

Additionally, it has been a common perception that a direct current voltage bias in plasma CVD process technology is necessary. However, the invention applies a pulse voltage from a high voltage pulse source on a substrate without substantially applying a direct bias voltage from a direct current source on said substrate to form a thin film on an inner wall surface.

Thus, even if combined, Fetherston and Warren do not render obvious the subject matter recited in claim 1, and claims 2-4 depending therefrom. Accordingly, withdrawal of the rejection of claims 1-4 under 35 U.S.C. §103(a) is respectfully requested.

New claim 9 is patentable at least for the patentability of claim 1 from which it depends, as well as for the additional feature it recites. For example, Fetherston and Warren do not disclose or suggest performing application of a pulse voltage without accelerating ions.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-9 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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